

# LPIC-1 Linux Administration 101

## Duration:

5 Days

## What is the course about?

LPIC-1 is the first certification in LPI's multi-level Linux professional certification program. The LPIC-1 will validate the candidate's ability to perform maintenance tasks on the command line, install and configure a computer running Linux and configure basic networking. The LPIC-1 is designed to reflect current research and validate a candidate's proficiency in real world system administration. The objectives are tied to real-world job skills. To become LPIC-1 certified, you must pass both the 101 and 102 exams. This is a vendor neutral course, the delegates can use any flavour of Linux.

## Duration

The course is run 5 days full time.

## Technical Skill

No prior knowledge is required to take this course. This is the first course in becoming a Linux Administrator. This course is together with LPIC 102 are required in order to fulfil the requirements of the LPIC-1 Linux Administrator Certification. You will need to pass both exams in order to be a certified LPIC Level 1 Linux Server Administrator.

## Private Training

The course can be offered privately onsite or on our premises. A minimum of 4 delegates is required to schedule the course. The course price is R9 500 onsite and R12 500 on our premises. There is no set date to run the course, we schedule the date that suits your team.

## Public Training

This course is also offered publicly. The course runs at our offices in Cape Town or Johannesburg. A minimum of 4 delegates is required to run the course. A tentative date is set but the course will only be confirmed to run once we have 4 confirmed bookings. There is no set date as the course is run on demand.

## Course Topics

### Determine and configure hardware settings

Enable and disable integrated peripherals

Configure systems with or without external peripherals such as keyboards

Differentiate between the various types of mass storage devices

Know the differences between coldplug and hotplug devices

Determine hardware resources for devices

Tools and utilities to list various hardware information \ (e.g. lsusb, lspci, etc.)

Tools and utilities to manipulate USB devices

Conceptual understanding of sysfs, udev, dbus

### Boot the System

Candidates should be able to guide the system through the booting process.  
Provide common commands to the boot loader and options to the kernel at boot time  
Demonstrate knowledge of the boot sequence from BIOS to boot completion  
Understanding of SysVinit and systemd  
Awareness of Upstart  
Check boot events in the log files

### Change runlevels / Boot targets and shutdown or reboot system

Set the default runlevel or boot target  
Change between runlevels √ boot targets including single user mode  
Shutdown and reboot from the command line  
Alert users before switching runlevels √ boot targets or other major system events  
Properly terminate processes

### Design hard disk layout

Allocate filesystems and swap space to separate partitions or disks  
Tailor the design to the intended use of the system  
Ensure the /boot partition conforms to the hardware architecture requirements for booting  
Knowledge of basic features of LVM

### Install a boot manager

Providing alternative boot locations and backup boot options  
Install and configure a boot loader such as GRUB Legacy  
Perform basic configuration changes for GRUB 2  
Interact with the boot loader

### Manage shared libraries

Identify shared libraries  
Identify the typical locations of system libraries  
Load shared libraries

### Use Debain Package Management

Install, upgrade and uninstall Debian binary packages  
Find packages containing specific files or libraries which may or may not be installed  
Obtain package information like version, content, dependencies, package integrity and installation status (whether or not the package is installed)

### Use RPM and YUM Package Management

Install, re-install, upgrade and remove packages using RPM and YUM  
Obtain information on RPM packages such as version, status, dependencies, integrity and signatures  
Determine what files a package provides, as well as find which package a specific file comes from

### Work on the command line

Use single shell commands and one line command sequences to perform basic tasks on the command line  
Use and modify the shell environment including defining, referencing and exporting environment variables

Use and edit command history  
Invoke commands inside and outside the defined path

### Process text streams using filters

Send text files and output streams through text utility filters to modify the output using standard UNIX commands found in the GNU textutils package

### Perform Basic File Management

Copy, move and remove files and directories individually  
Copy multiple files and directories recursively  
Remove files and directories recursively  
Use simple and advanced wildcard specifications in commands  
Using find to locate and act on files based on type, size, or time  
Usage of tar, cpio and dd

### Use Streams, Pipes and Redirects

Redirecting standard input, standard output and standard error  
Pipe the output of one command to the input of another command  
Use the output of one command as arguments to another command  
Send output to both stdout and a file

### Create, Monitor and Kill Processes

Run jobs in the foreground and background  
Signal a program to continue running after logout  
Monitor active processes  
Select and sort processes for display  
Send signals to processes

### Modify Process Execution Priorities

Know the default priority of a job that is created  
Run a program with higher or lower priority than the default  
Change the priority of a running process

### Search Text Files Using Regular Expressions

Create simple regular expressions containing several notational elements  
Use regular expression tools to perform searches through a filesystem or file content

### Perform Basic File Editing Operations using vi

Navigate a document using vi  
Use basic vi modes  
Insert, edit, delete, copy and find text

### Create Partitions and Filesystems

Manage MBR partition tables  
Use various mkfs commands to create various filesystems such as:ext2, ext3, ext4, XFS and VFAT  
Awareness of ReiserFS and Btrfs  
Basic knowledge of gdisk and parted with GPT

### Maintain the integrity of filesystems

- Verify the integrity of filesystems
- Monitor free space and inodes
- Repair simple filesystem problems

### Control mounting and unmounting of filesystems

- Manually mount and unmount filesystems
- Configure filesystem mounting on bootup
- Configure user mountable removable filesystems

### Manage Disk Quotas

- Set up a disk quota for a filesystem
- Edit, check and generate user quota reports

### Manage file permissions and ownership

- Manage access permissions on regular and special files as well as directories
- Use access modes such as suid, sgid and the sticky bit to maintain security
- Know how to change the file creation mask
- Use the group field to grant file access to group members

### Create and change hard and symbolic links

- Create links
- Identify hard and/or soft links
- Copying versus linking files
- Use links to support system administration task

### Find system files and place files in the correct location

- Understand the correct locations of files under the FHS.
- Find files and commands on a Linux system.
- Know the location and purpose of important file and directories as defined in the FHS.